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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/547,535	08/31/2005	Shigeo Kittaka	10873.1764USWO	8143
52835	7590	11/07/2006	EXAMINER	
HAMRE, SCHUMANN, MUELLER & LARSON, P.C. P.O. BOX 2902 MINNEAPOLIS, MN 55402-0902			PETKOVSEK, DANIEL J	
			ART UNIT	PAPER NUMBER
			2874	

DATE MAILED: 11/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/547,535

Applicant(s)

KITAKA ET AL.

Examiner

Daniel J. Petkovsek

11/3/06

Art Unit

2874

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on terminal disclaimer filed July 19, 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on August 31, 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>6/12/06; 11/17/05</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This office action is in response to the terminal disclaimer filed on July 19, 2006. Claims 1-19 are pending.

Terminal Disclaimer

1. The terminal disclaimer filed on July 19 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of 10/547,828 application for patent has been reviewed and is accepted. The terminal disclaimer has been recorded.

Information Disclosure Statement

2. The prior art documents submitted by Applicant in the Information Disclosure Statements filed on November 17, 2005 and June 12, 2006, have been considered and made of record (note attached copy of forms PTO-1449).

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 2, 4, 6, 10-12, and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Kittaka et al. US 2002/0027655 A1.

Kittaka et al. US 2002/0027655 A1 teaches (see Figs. 1, 2, 12; [0069]-[0073]; [0122]-[0123]) a waveguide element using a photonic crystal, the waveguide element comprising: a core formed of a photonic crystal having a refractive index periodicity in at least two directions

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perpendicular to a propagation direction of an electromagnetic wave; and a cladding arranged in contact with the core in order to confine the electromagnetic wave in the core; wherein an incident side phase modulation portion is provided in order to allow an electromagnetic wave that is coupled to a band on or near a Brillouin zone boundary in a photonic band structure in the core and propagates in the core to enter the core (see Figs.), which clearly, fully meets Applicant's claimed limitations.

Regarding claim 2, the phase modulation portion allows the EM wave that entirely (or mostly) belongs to a single photonic band and propagates to enter the core region.

Regarding claims 4 and 6, a substantially plane wave with an inclination angle could enter the incident side phase modulation portion, or into an in-plane direction parallel with the incident surface to enter the core.

Regarding claims 10-12, an exit side phase modulation portion is provided and can convert exiting waves (see figs.), in a manner of the reverse of the incident side.

Regarding claim 16, the core is a homogenous material, having a plurality of cavities extending along in order to have a constant period in a plane perpendicular.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 3, 5, 7-9, 13-15, and 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kittaka et al. US 2002/0027655 A1.

Kittaka et al. US 2002/0027655 A1 teaches (see Figs. 1, 2, 12; [0069]-[0073]; [0122]-[0123]) a waveguide element using a photonic crystal, the waveguide element comprising: a core formed of a photonic crystal having a refractive index periodicity in at least two directions perpendicular to a propagation direction of an electromagnetic wave; and a cladding arranged in contact with the core in order to confine the electromagnetic wave in the core; wherein an incident side phase modulation portion is provided in order to allow an electromagnetic wave that is coupled to a band on or near a Brillouin zone boundary in a photonic band structure in the core and propagates in the core to enter the core (see Figs.). Kittaka et al. '655 does not explicitly teach some of the dependent claim limitations.

Regarding claims 3, 5, 7-9, 13-15, and 17-19, although Kittaka et al. '655 does not explicitly teach the dependent claim limitations upon independent claim 1 (taught by Kittaka et al. '655), it would have been obvious to a person having ordinary skill in the art at the time the invention was made to recognize that these modifications to the prior art of Kittaka et al. '655 would have been noncritical design choices, in comparison to the prior art. The particular claim elements do not patentably distinguish the claimed limitations from the prior art of record since one of ordinary skill would have recognized these modifications as being obvious design choices in view of what is taught in relation to sole independent claim 1.

Conclusion

7. A new grounds of rejection has been made herewith, and this rejection has been made **NON-FINAL**.


8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: PTO-892 form references A-D.

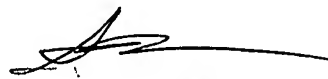
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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel J. Petkovsek whose telephone number is (571) 272-2355. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on (571) 272-2344. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Daniel Petkovsek
November 3, 2006


SUNG PAK
PRIMARY EXAMINER